Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

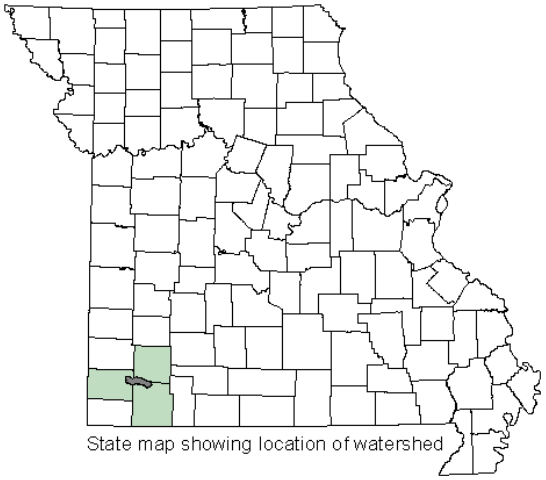
Clear Creek

Waterbody Segment at a Glance:

Counties: Barry, Lawrence, Newton
Nearby Cities: Monett
Length of impairment: 3 miles
Pollutants: Nutrients
Source: Monett Wastewater Treatment Plant

The 2002 303(d) list proposes to delete BOD, NFR and NH_3-N as pollutants and add nutrients.

TMDL Priority Ranking: Low


State map showing location of watershed

Description of the Problem

Beneficial uses of Clear Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life and Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

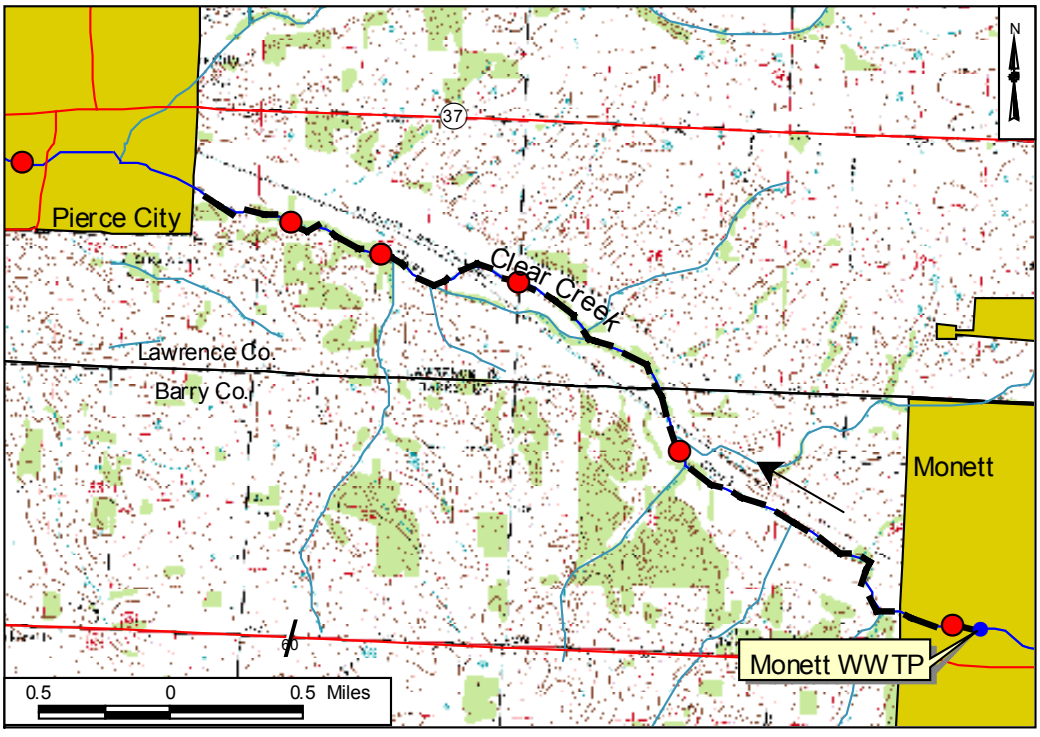
- The impairment of Clear Creek is based on exceedence of the general criteria contained in Missouri's Water Quality Standards (WQS), 10 CSR 20-7.031 (3)(A) and (C). These criteria state:
  - Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
  - Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.
- The WQS, found in 10 CSR 20-7.031 Table A, for dissolved oxygen in streams is 5.0 mg/L (milligrams per liter or parts per million).

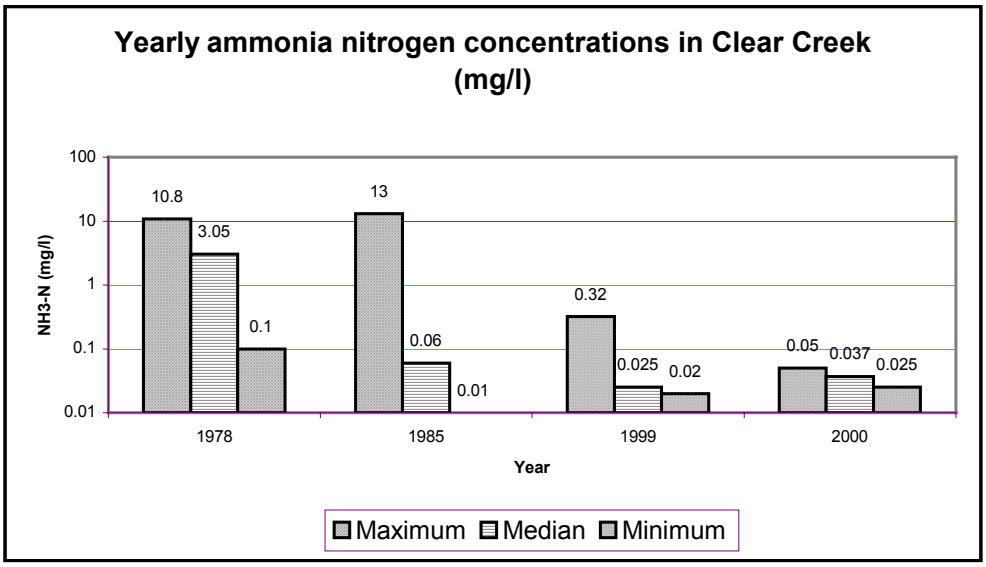
The Monett Wastewater Treatment Plant (WWTP) has experienced recurring mechanical problems, which have led to frequent exceedences of permit limits. Adding to the problem were sporadic, large discharges of wastewaters from food processing industries within the city. The concern is the discharge of nutrients from the wastewater treatment plant. When water becomes rich in nutrients (like phosphorus and nitrogen), it results in an increase in plant life and algal blooms. Excessive algal growth is not only aesthetically unpleasant, it causes fundamental changes in a water ecosystem. Dissolved oxygen in the water can become depleted when algal blooms die off and decay. In addition,

oxygen levels become depressed in the early morning hours when the sun has been down and plants have not been producing oxygen through photosynthesis, but overabundant aquatic life continues to consume oxygen. This can have serious negative impacts on what can survive in the water.

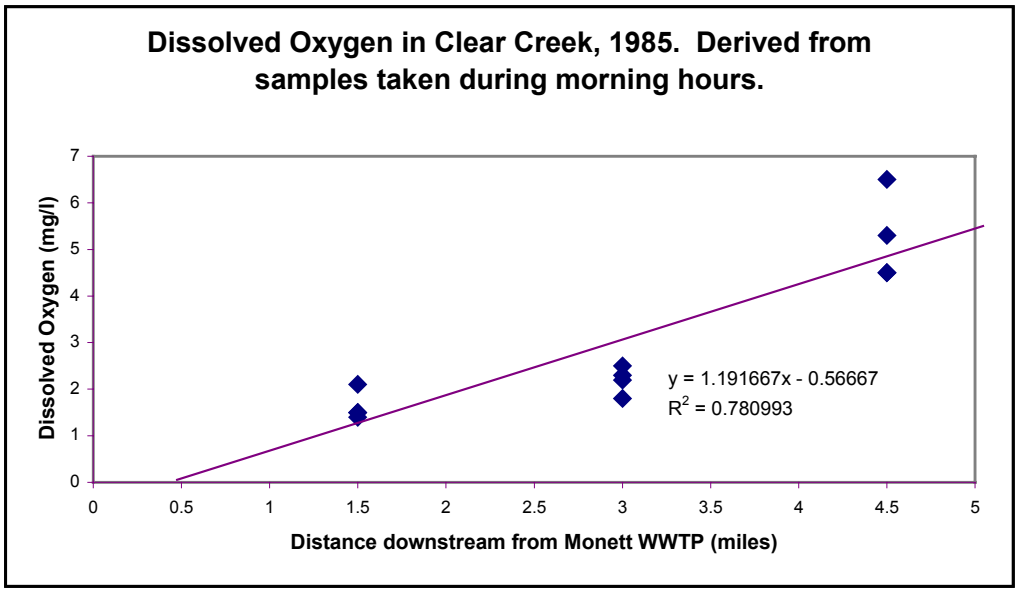
The Missouri Attorney General's Office initiated legal action against the city of Monett in December 1988 due to chronic noncompliance with permit limits. Water quality studies of Clear Creek in the 1980's and early 1990's resulted in more stringent treatment requirements for the Wastewater Treatment Plant. This resulted in an upgrade that was completed in 1996. Follow-up water quality studies conducted on the creek in 1999 and 2000 showed that ammonia, BOD and NFR levels were acceptable but that oxygen levels were still too low. Biological studies performed in 1997 and 2000 show that the aquatic invertebrate community in the creek is still impaired. According to the terms in the TMDL (which was approved by the U.S. Environmental Protection Agency in December, 1999), since water quality standards are not being met, this TMDL will be re-opened and Missouri will re-evaluate the loading capacity and allocations, as appropriate. Because ammonia, BOD and NFR levels are acceptable, they will be removed as pollutants from the 303(d) list. Since the work that has been done has not solved the problems, which include excessive algal growth and low dissolved oxygen, Clear Creek will have nutrients added as the pollutant.

Map of Clear Creek and Sampling Sites, Barry County

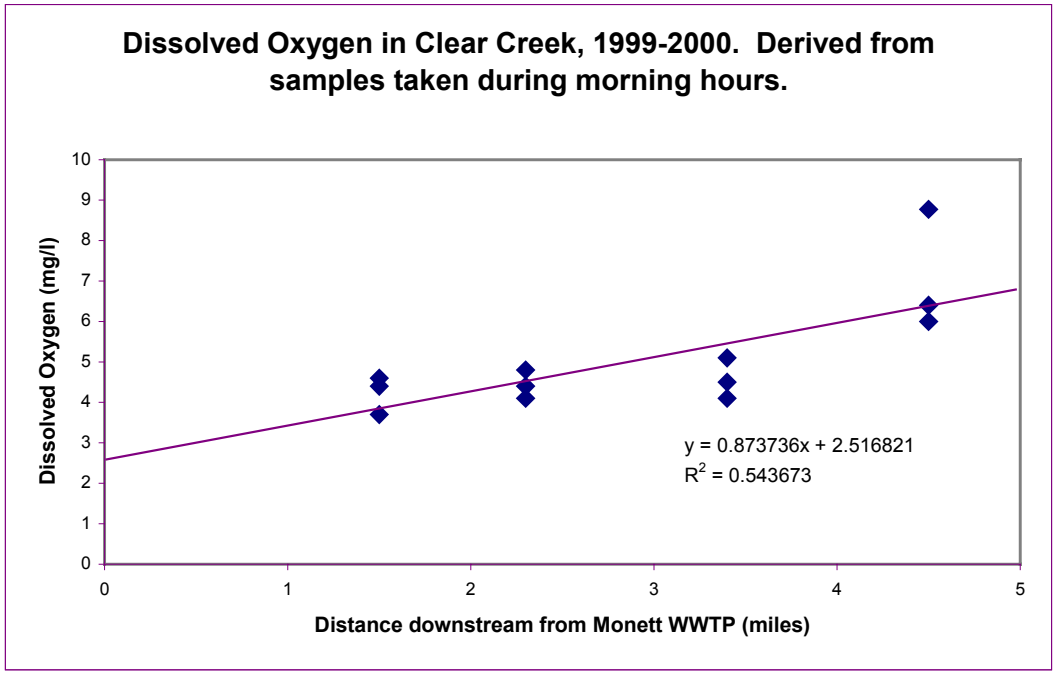




Source: Missouri Department of Natural Resources



Source: Missouri Department of Natural Resources



This graph, using 1999 and 2000 data, shows that DO levels are improving.
Source: Missouri Department of Natural Resources

For more information call or write:
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